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Application Number 10/615,336
Amendment dated 18 January 2007
Reply to Office Action of 20 September 2006

Remarks

Claim 14 has been cancelled in this amendment, and new Claims 38–50 have been added. Therefore, Claims 12, 13, 18, 24, 25, 27, 28, 30, 31 and 38–50 are currently pending in this application. Claims 24, 25, 28, 41 and 47 are independent.

Claim Rejections Under 35 U.S.C. § 102(b).

Claims 18 and 24 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,408,873 (“Schmidt”). Claim 24 is independent, and Claim 18 depends therefrom.

Schmidt discloses a foot force sensing insole that is worn inside a person's shoe, and that is capable of sensing varying compressive force exerted by a person's foot (see 1:11–21). The insole (40) has a first layer (30) and a second layer (38), between which electrically conductive interconnecting means (16) is disposed (see 3:26–47 and Figure 2). The electrically conductive interconnecting means has a variable resistance depending on the magnitude of a compressive force applied to the insole (see 3:10–12). Several sensing surface areas (48) can be positioned at various locations on the foot force sensor, such as at the heel and at various metatarsal heads (see 5:20–30 and Figure 5). However, even in embodiments where multiple surface sensing areas are provided, the conductive interconnecting means is positioned only between the first and second layers. Figures 2 and 5 of Schmidt are reproduced below for the Examiner's convenience.

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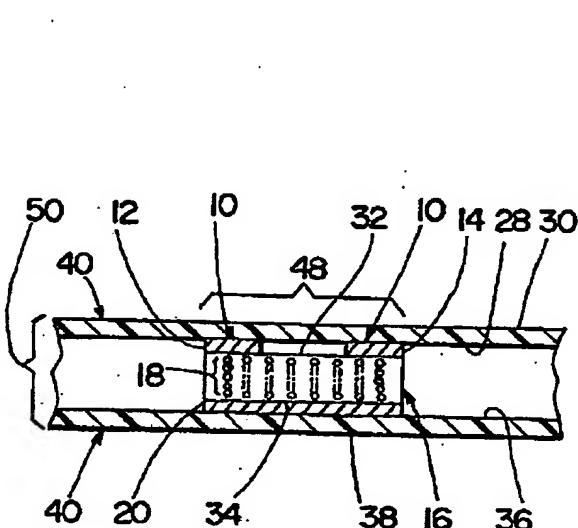


Fig. 2

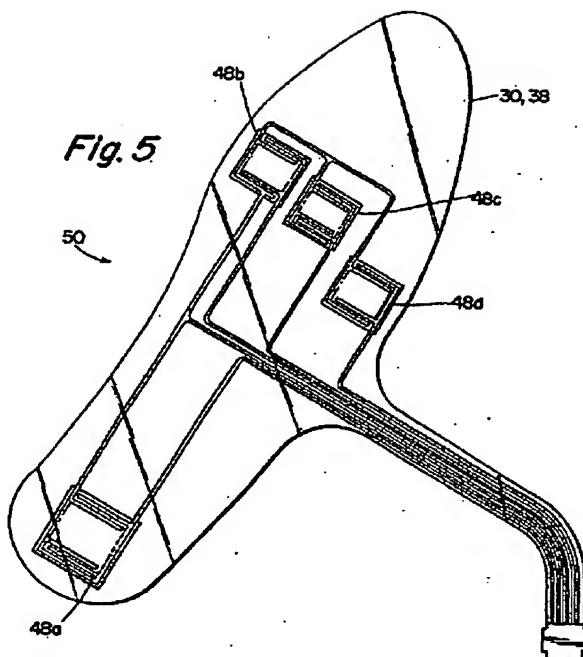


Fig. 5

In contrast to the disclosure of Schmidt, Applicants have amended Claim 24 to recite a socket liner having several features that are distinguishable from the Schmidt disclosure. For example, amended Claim 24 recites, among other things,

a liner in the shape of a tubular body having a longitudinal axis that extends from a closed distal end of the liner to an open proximal end of the liner, wherein [¶] the liner is generally symmetrical about the longitudinal axis [emphasis added]

Amended Claim 24 further recites, among other things,

a physiological sensor configured to receive data from a limb regarding its physiological characteristics;

the sensor being positioned in a channel formed between the liner inner layer and the liner outer layer;

the sensor including an extending portion that extends from the open proximal end of the liner; [emphasis added]

The amendments to Claim 24 find support, for example, in Paragraph [0039] and Figures 6 through 9 of the published specification.

Clearly Schmidt cannot anticipate amended Claim 24. At the outset, Applicants note that Schmidt discloses a foot force sensing insole that is worn inside a person's

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shoe. Thus Schmidt clearly does not disclose "a liner in the shape of a tubular body having a longitudinal axis that extends from a closed distal end of the liner to an open proximal end of the liner," as is recited in amended Claim 24.

Furthermore, the Examiner characterizes elements 34, 16 and 18 as forming a physiological sensor in Schmidt. It is clear from Figures 2 and 5, reproduced above, that these elements are positioned entirely within the first layer 30 and the second layer 38, and thus cannot include "an extending portion that extends outward from a liner opening". On the other hand, Schmidt characterizes element 50 as a foot force sensor. However Figure 2, reproduced above, clearly indicates that element 50 includes first layer 30 and second layer 38, and thus is clearly not "positioned in a channel formed between the liner inner layer and the liner outer layer" (emphasis added).

Based on the foregoing, Applicants respectfully submit that Schmidt does not teach the combination of features recited in Claim 24, and therefore respectfully request the rejection of Claim 24 be withdrawn. Furthermore, because Claim 18 depends from Claim 24, Applicants respectfully submit that Claim 18 is allowable over Schmidt for at least the same reasons that Claim 24 is allowable, in addition to reciting further unique distinguishing features. For example, Claim 18 recites that "the sensor wraps around a bottom of the inner layer", which is clearly not disclosed in Schmidt. Applicants therefore respectfully request that the rejection of Claim 18 be withdrawn as well.

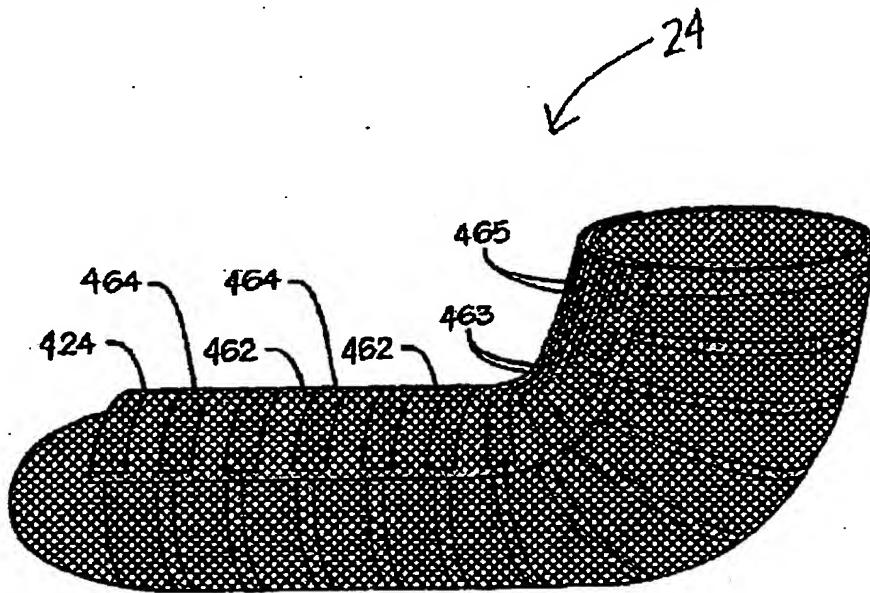
Claim Rejections Under 35 U.S.C. § 103(a).

Claims 12–14, 25, 27, 28, 30 and 31 stand rejected as being unpatentable over Schmidt in view of U.S. Patent 6,922,592 ("Thompson"). Claim 25 is independent, and Claims 12, 13 and 27 depend therefrom. Claim 28 is independent, and Claims 12, 13, 30 and 31 depend therefrom. Claim 14 has been cancelled.

Thompson discloses a sensor sock that is configured to be fitted on the foot of a patient (see 5:23–26). The sensor sock (24) includes an array of piezoresistive force sensors that is inserted into a shoe, or that is incorporated into a sock that can be pulled over a foot (see 5:26–29). The sensor sock includes outer tubular raw lead-out tubular lamination 424 that is made from flextron material (see 5:30–37). The lamination has

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etched through the thickness dimension thereof circumferentially and longitudinally disposed insulating paths 462 and 463 defining laterally disposed longitudinally flag appendages 464 that are connected to longitudinally disposed lead-out traces 465 (see 5:31–37). Figure 5 of Thompson is reproduced below for the Examiner's convenience.



Claims 25, 12, 13 and 27. In contrast to the combined disclosure of Schmidt and Thompson, Applicants have amended Claim 25 to recite a socket liner that comprises, among other things,

at least one sensor ... wherein the sensor includes an extending portion that extends outward from an inner liner layer opening. [emphasis added]

The amendments to Claim 25 find support, for example, in Paragraph [0039] and Figures 6 through 9 of the published specification.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art (see MPEP 2143.03). As set forth above, Schmidt does not disclose a sensor that "includes an extending portion that extends outward from an inner liner layer opening". Thompson cannot remedy the deficiencies of Schmidt. In particular, not only is the claimed configuration not illustrated in Thompson, but the written description of Thompson does not even describe how the

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piezoresistive force sensors are arranged on the sensor sock. Specifically, Thompson states only that the sensor sock includes "an array of piezoresistive force sensors that is inserted into a shoe or is incorporated into a sock that may be pulled over a foot." Clearly this broad statement cannot be considered to teach the specific layout and arrangement recited in amended Claim 25.

Based on the foregoing, Applicants respectfully submit that the combined disclosure of Schmidt and Thompson does not teach the combination of features recited in Claim 25, and therefore respectfully request the rejection of Claim 25 be withdrawn. Furthermore, because Claims 12, 13 and 27 depend from Claim 25, Applicants respectfully submit that Claims 12, 13 and 27 are allowable over the combined disclosure of Schmidt and Thompson for at least the same reasons that Claim 25 is allowable, in addition to reciting further unique distinguishing features. For example, Claim 27 recites that "the sensor is positioned along a first side of the inner liner layer, around a bottom portion of the inner liner layer, and along a second side of the inner liner layer, the second side of the inner liner layer being opposite the first side of the inner liner layer", which is clearly not disclosed in either Schmidt or Thompson. Applicants therefore respectfully request that the rejection of Claims 12, 13 and 27 be withdrawn as well.

Claims 28, 12, 13, 30 and 31. In contrast to the combined disclosure of Schmidt and Thompson, Applicants have amended Claim 28 to recite a socket liner that comprises, among other things,

at least one sensor ... wherein the sensor is an elongate strip positioned along a longitudinal axis of the liner body. [emphasis added]

The amendments to Claim 28 find support, for example, in Paragraph [0038] and Figure 1 of the published specification.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art (see MPEP 2143.03). As set forth above, Schmidt does not disclose a sensor that "is an elongate strip positioned along a longitudinal axis of the liner body". Thompson cannot remedy the deficiencies of Schmidt. In particular, not only is the claimed configuration not illustrated in Thompson, but the written description of Thompson does not even describe how the

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piezoresistive force sensors are arranged on the sensor sock. Specifically, Thompson states only that the sensor sock includes "an array of piezoresistive force sensors that is inserted into a shoe or is incorporated into a sock that may be pulled over a foot." Thompson discloses longitudinally disposed lead-out traces, but not a "sensor" that is an elongate strip positioned along a longitudinal axis of the liner body", as recited in amended Claim 28. Therefore, the disclosure of Thompson cannot be considered to teach the specific layout and arrangement recited in amended Claim 28.

Based on the foregoing, Applicants respectfully submit that the combined disclosure of Schmidt and Thompson does not teach the combination of features recited in Claim 28, and therefore respectfully request the rejection of Claim 28 be withdrawn. Furthermore, because Claims 12, 13, 30 and 31 depend from Claim 28, Applicants respectfully submit that Claims 12, 13, 30 and 31 are allowable over the combined disclosure of Schmidt and Thompson for at least the same reasons that Claim 28 is allowable, in addition to reciting further unique distinguishing features. For example, Claim 30 recites that "the sensor wraps around a bottom portion of the interior surface of the liner body", which is clearly not disclosed in either Schmidt or Thompson. Applicants therefore respectfully request that the rejection of Claims 12, 13, 30 and 31 be withdrawn as well.

New Claims 38–50.

Applicants have added **new Claims 38 and 39**, which depend from independent Claim 24. New Claim 38 recites that "the extending portion of the sensor is more rigid than other portions of the sensor". New Claim 39 recites "a short sensor that is positioned in a second channel formed between the liner inner layer and the liner outer layer, wherein the short sensor does not extend outward from the liner opening". Both of these features are clearly disclosed, for example, in Paragraph [0039] and Figures 6 through 9 of the published specification. Thus, Applicants respectfully submit that no new matter has been added, and that new Claims 38 and 39 are allowable over the cited references for at least the same reasons that Claim 24 is allowable, in addition to reciting further unique distinguishing features.

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Applicants have also added new Claim 40, which depends from independent Claim 28. New Claim 40 recites that "the sensor includes an extending portion that extends outward from a liner body opening". This feature is clearly disclosed, for example, in Paragraph [0039] and Figures 6 through 9 of the published specification. Thus, Applicants respectfully submit that no new matter has been added, and that new Claim 40 is allowable over the cited references for at least the same reasons that Claim 28 is allowable, in addition to reciting further unique distinguishing features.

New Claim 41, which is independent, recites an apparatus comprising an inner liner, an outer liner and a sensor. The inner liner is configured to receive a residual limb of an amputee, wherein the inner liner has the shape of a tubular body with a longitudinal axis that extends from a closed distal end of the inner liner to an open proximal end of the inner liner, and wherein the inner liner is generally symmetrical about the longitudinal axis. The outer liner is an outer liner positioned over the inner liner and having an exterior surface configured to receive a socket thereover, such that the outer liner forms an interface between the inner liner and the socket. The sensor is configured to receive physiological data from the residual limb, the sensor positioned between the inner liner and the outer liner. These features are clearly disclosed, for example, in Paragraphs [0037] – [0039] and Figures 1 through 3 of the published specification. The systems disclosed in the references of record do not teach an apparatus having this combination of features, and thus Applicants respectfully submit that new Claim 41 is allowable over these references.

New Claims 42–46 depend from independent Claim 41, and further distinguish the invention of Claim 41 from the references of record. Therefore, Applicants respectfully submit that new Claims 42–46 are allowable for at least the same reasons that new Claim 41 is allowable.

New Claim 47, which is independent, recites a system for monitoring amputee progress. The system includes a liner having an inner layer and an outer layer, wherein the liner inner layer is configured to receive a residual limb of an amputee. The system also includes a physiological sensor positioned between the liner inner layer and the liner outer layer, wherein the physiological sensor is configured to receive data from the

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residual limb regarding its physiological characteristics. The system also includes a socket coupled to the liner outer layer. The system also includes a transmitter configured to send data to a receiver to allow an end user to analyze the physiological characteristics of the residual limb. These features are clearly disclosed, for example, in Paragraphs [0021], [0035] and [0037] – [0039] and Figures 1 through 3 of the published specification. The systems disclosed in the references of record do not teach this combination of features, and thus Applicants respectfully submit that new Claim 47 is allowable over these references.

New Claims 48–50 depend from independent Claim 47, and further distinguish the invention of Claim 47 from the references of record. Therefore, Applicants respectfully submit that new Claims 48–50 are allowable for at least the same reasons that new Claim 47 is allowable.

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Conclusion.

Applicants respectfully submit that the claims are in condition for allowance. Furthermore, any remarks in support of patentability of one claim should not be imputed to any other claim, even if similar terminology is used. Any remarks referring to only a portion of a claim should not be understood to base patentability on that portion; rather, patentability must rest on each claim taken as a whole. Applicants respectfully traverse each of the Examiner's rejections and each of the Examiner's assertions regarding what the prior art shows or teaches, even if not expressly discussed herein. Although new claims have been presented, no acquiescence or estoppel is or should be implied thereby; these new claims are presented only to expedite prosecution of the present application, and are without prejudice to the presentation or assertion, in the future, of claims relating to the same or similar subject matter. If some issue remains that the Examiner feels can be addressed by an Examiner's Amendment, the Examiner is cordially invited to call the undersigned for authorization.

Respectfully submitted,

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